Valvular Heart Disease

Introduction
There are four valves in the heart: the tricuspid valve, the pulmonic valve, the mitral valve, and the aortic valve. Valves are thin, smooth structures that allow blood to flow one way through the heart chambers. They open to let blood through, and they snap shut to keep the blood from flowing backward. The valves of the heart are shown in the diagrams below:

Valve disease
Valve problems can occur at any age. Some people are born with a valve that is weakened in some way. Others may get valve problems from an infection, such as rheumatic fever. Valves can also collect calcium deposits with age or be damaged when a person has a heart attack.

Weakening or scarring of a valve can:
• Make it harder for the valve to open. This is called stenosis.
• Prevent the valve from closing. This is called insufficiency.

Damaged valves can increase the work of the heart. Some people may need to have a valve repaired or replaced to allow their heart to pump better.
Signs and symptoms of valve disease
The symptoms of valve disease differ with each person. Some people have no symptoms for many years. As the damaged valve gets worse, the heart may begin to show signs that it cannot keep up with the normal workload.

Symptoms of heart failure can occur when your valve(s) are not working normally. Heart failure does not mean that your heart stops beating. It means that your heart is not pumping as well as it should. The earlier the symptoms are noted, the easier it is to treat. The main symptoms are:

• **Shortness of breath** – When the heart does not pump well, blood flow can slow down. This causes blood to back up and fluid to build up in the lungs. As a result, shortness of breath can come on slowly or quickly. Trouble breathing with daily activities or at night is a common sign of heart failure.

• **Weight gain** – During heart failure, the body retains fluid. The fluid often collects in the legs (causing swollen ankles and legs) or in the abdomen. A weight gain of 3-5 pounds in a day or two may occur. Daily weight checks are important to keep track of any sudden gains.

• **Swelling (edema)** – If the heart is not pumping well, fluid can build up in the tissues. Swelling in the feet, ankles, legs or abdomen (stomach) can happen slowly or quickly. This could be (but is not always) a sign of heart failure.

• **Excessive fatigue** – This is not normal and your doctor will want to find out the cause.

Other symptoms of heart failure include:
• Persistent cough
• Urinating more often during the night
• Loss of appetite for more than 1 to 2 days
• Abdominal pain, nausea, bloating or vomiting
• Waking up at night short of breath
• Shortness of breath while lying flat

Diagnosis of valve disease
Your doctor may suspect a valve problem from your symptoms and the results of a chest x-ray and electrocardiogram (EKG). Other tests may be done to see how well your heart and valves are working.

• **An echocardiogram** gives a picture of the size, shape and movement of the valves and heart muscle through the use of sound waves. A small device is placed on the chest and moved around on the skin to get pictures from several angles.

• **A heart scan** can help show how the heart muscle is working and whether there is damage. Several different scans may be ordered. These tests often involve injecting a special substance into a vein so that pictures may be taken.

• **Cardiac catheterization** involves inserting a slender flexible tube through the bloodstream and into the heart. It is the best way to see how the heart and valves are working.

Surgical treatment of valve disease
Some patients with valve disease are able to lead normal lives under medical care. Others may need to have their valve repaired or replaced in surgery. Replacement can be done with an artificial valve made of metal or plastic or with a valve made from animal tissue. The doctors will decide which valve is best for each patient, based on factors such as:
• Age
• Heart size
• Disease process
• Whether the patient is willing and able to take certain medications

If you are scheduled for valve surgery, your doctors and nurses will give you information about every step during your hospital stay. You will also receive detailed instructions as you prepare to go home. The next page of this handout describes some of the main topics that will be discussed with you.
**Diet changes**
A special diet to restrict salt (sodium) intake may be prescribed for you. Extra sodium can make the body retain fluid. A lower salt intake will help to decrease the likelihood that fluids will stay in your body. A dietitian can tell you about foods to avoid.

**Risk of infection (endocarditis)**
Endocarditis is an infection of the heart’s inner lining (the endocardium) and can involve the heart’s valves as well. This infection occurs when bacteria or other microorganisms enter the bloodstream and invade damaged or abnormal structures within the heart. Artificial heart valves do not have a built-in way to help the body fight infection.

Before and after surgery, you can reduce your risk for endocarditis by telling every doctor or dentist you see about your valve disease and/or your artificial valve. They may prescribe antibiotics before and after procedures or injuries to prevent infection. Be sure to have any infection or injury treated right away. Ask your nurse for more information on reducing your risk for endocarditis.

**Risk of blood clots**
Artificial valves do not have the thin, smooth surfaces that normal human valves have. For this reason, the doctor may order special medications to decrease the chances of clots forming as blood flows through the artificial valve. You will receive instructions on the medication your doctor prescribes for you.

**Risk of changes in heartbeat**
Patients who have had (or need to have) valve surgery may have changes in their heart rhythm. It is important to count your pulse (heartbeat) daily and report changes in the rate or regularity to your doctor.

**Use of Medical Alert information**
Because of the risk of endocarditis and blood clots, valve patients are encouraged to carry information with them that will alert others to these risks. Your nurse can give you information about Medical Alert identification cards and jewelry.

**Remember**
- Report these symptoms to your doctor:
  - Shortness of breath, especially with usual activities or when lying down
  - Swelling (edema)
  - Weight gain
  - Excessive fatigue
  - Change in your heartbeat or palpitations
- Take your medication as directed, even after you are feeling better
- Follow your prescribed diet
- Weigh yourself daily and keep a record
- Balance activities with rest
- Keep your regular doctor appointments

---

**Common Types of Valves Used for Replacement**

- **Tissue (animal) Valve**
- **Mechanical Valve**